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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,909	05/12/2006	Koudai Yoshizawa	040356-0588	3226
23428 7590 03/12/2010 FOLEY AND LARDNER LLP SUITE 500 3000 K STREET NW WASHINGTON, DC 20007				
EXAMINER				
CONLEY, O'K				
ART UNIT		PAPER NUMBER		
1795				
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03/12/2010		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,909

Applicant(s)

YOSHIZAWA ET AL.

Examiner

HELEN O.K. CONLEY

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) 12 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11, 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicants' Response to Election/Restriction was received on 12/31/09. Claim 2 has been amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action.

Election/Restrictions

3. Applicant's election of even number of bents pertaining to claim 11 in the reply filed on 12/31/09 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 5/12/2006, 7/6/2006, 11/13/2007, 1/19/2010 was filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings

6. The drawings were received 5/12/2006. These drawings are acceptable.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 9-11, 14-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "the cathode gas passage and the anode gas passage forming gas flows that are in parallel and in opposite directions to each other" is unclear. Specifically, it appears that that the "gas flows" of each cathode and anode "are in parallel and in opposite directions from each other" or the cathode gas flow and the anode gas flow "are in parallel and in opposite directions from each other". Appropriate corrections are required.

9. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "in addition to the most downstream bent portion, at least one of even-numbered bent portions as counted from an inlet side, other than the most downstream bent portion, comprises a through-hole which allows movement of moisture through the fuel " is unclear. Appropriate corrections are required.

10. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The recitation "counted from an inlet side" is unclear. The

claims comprises a cathode inlet, a anode inlet and a coolant inlet, therefore it is unclear which inlet the Applicants are claiming. Appropriate corrections are required.

11. Claims depending from claims rejected under 35 U.S.C. 112, second paragraph are also rejected for the same.

Claims Analysis

12. Regarding claims 9-11, 14-16, the recitation ""the cathode gas passage and the anode gas passage forming gas flows that are in parallel and in opposite directions to each other" will be interpreted as the "gas flows" of each cathode and anode "are in parallel and in opposite directions from each other," for the purposes of compact prosecution.

13. Regarding claim 11, the recitation "in addition to the most downstream bent portion, at least one of even-numbered bent portions as counted from an inlet side, other than the most downstream bent portion, comprises a through-hole which allows movement of moisture through the fuel cell" will be interpreted as "at least the even numbered bent portions including the bent portion from an inlet side and excluding the most down stream bent portion, comprises through hole allows movement of moisture through the fuel cell"

14. The recitation "counted from an inlet side" will be interpreted as the cathode inlet side for the purposes of compact prosecution.

15. From the Applicants' specification, it doesn't appear the LLC passage in between the fuel cell stack impart any structure to the fuel cell stack. The recitation "provided with an LLC passage" is noted as "intended use" language and it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Masham, 2 USPQ2d 1647 (1987).

16. As best understood, please refer to the prior art rejections below.

Claim Rejections - 35 USC § 102

17. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

18. Claims 9-11, 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Wada et al. (US Publication 2002/0192522 A1)

Regarding claim 9, the Wada et al. reference discloses fuel cell stack, comprising fuel cells (19) wherein a supply of an anode gas and a cathode gas for power

generation. The fuel cell comprising an anode separator comprising an anode gas passage which has a meandering configuration with two or more bent portions (lower plate of Fig. 3) and a cathode separator comprising a cathode gas passage which has a meandering configuration with bent portions (upper plate of Fig. 3), the number of the bent portions of the cathode gas passage being equal to the number of the bent portions of the anode gas passage (P38, Fig. 6), the cathode gas passage and the anode gas passage each having gas flows that are in bends and become parallel to the previous flow passage in which the flow becomes opposite directions to each other. The separator further comprises through-hole (32a or 32b) which is provided in a most downstream bent portion in at least one of the anode gas passage and the cathode gas passage, the through-hole allowing movement of moisture through the fuel cells.

Regarding claim 10, the Wada et al. reference discloses the fuel cell stack has a square shape cross-section and further comprises an anode gas supply manifold which supplies the anode gas to the anode gas passage of each fuel cell (33a) and an anode effluent exhaust manifold which recovers an anode effluent from the anode gas passage of each fuel cell (33b). The anode effluent exhaust manifold being arranged offset (Applicant's diagonally) with respect to the anode gas supply manifold in the cross-section of the fuel stack. A cathode gas supply manifold which supplies a cathode gas to the cathode gas passage of each fuel cell (34a) and a cathode effluent exhaust manifold which recovers cathode effluent from the cathode gas passage of each fuel cell (34b). The cathode effluent exhaust manifold being arranged offset (Applicants' diagonally) with respect to the cathode gas supply manifold in the cross-section of the

fuel cell stack. The anode gas supply manifold and the cathode effluent exhaust manifold are arranged in parallel along a first side of the stacking surface of the fuel cell (Fig. 3 to the left of the stack), while the anode effluent exhaust manifold and the cathode gas supply manifold are arranged in parallel along a second side (Fig. 3, to the right of the stack), which is opposed to the first side with respect to the cross-section of the fuel cell stack.

Regarding claim 11, the Wada et al. reference the anode gas passage and the cathode gas passage respectively comprise an even number of bent portions (P38), the number being two or more (which incorporates four or more). The even numbered bent portions (8 bent portions as depicted by Fig. 3) including the bent portion from cathode inlet side and excluding the most down stream bent portion, comprises through hole allows movement of moisture through the fuel cell (32a).

Regarding claim 14, the Wada et al. reference discloses a drain manifold (all of that plates that connect 32b together) which drains water in the through-hole to outside of the fuel cell stack (Fig. 7).

Regarding claim 15, the Wada et al reference discloses fuel cells are provided with a coolant passage (32a) therebetween which is substantially superimposed in a stacking direction on the cathode gas passage and through which a coolant flows in the same direction as a cathode gas that flows (34a) in the cathode gas passage.

Regarding claim 16, the Wada et al. reference discloses the fuel cell stack comprises supply manifolds that respectively distribute the anode gas, the cathode gas, and the coolant to the fuel cells, and exhaust manifolds that respectively recover an

anode gas, a cathode gas, and a coolant from the fuel cells, and wherein the anode gas supply manifold, the cathode gas exhaust manifold and the coolant exhaust manifold are located on the left side of Fig. 3, while the anode gas exhaust manifold, the cathode gas supply manifold and the coolant supply manifold are located on the right side of Fig.

19. Claims 9-11, 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Inagaki et al. (US Publication 2002/0192532 A1)

Regarding claim 9, the Inagaki et al. reference discloses fuel cell stack, comprising fuel cells (19) wherein a supply of an anode gas and a cathode gas for power generation. The fuel cell comprising an anode separator comprising an anode gas passage which has a meandering configuration with two or more bent portions (lower plate of Fig. 3) and a cathode separator comprising a cathode gas passage which has a meandering configuration with bent portions (upper plate of Fig. 3), the number of the bent portions of the cathode gas passage being equal to the number of the bent portions of the anode gas passage (P38), the cathode gas passage and the anode gas passage each having gas flows that are in bends and become parallel to the previous flow passage in which the flow becomes opposite directions to each other. The separator further comprises through-hole (32a or 32b) which is provided in a most downstream bent portion in at least one of the anode gas passage and the cathode gas passage, the through-hole allowing movement of moisture through the fuel cells.

Regarding claim 10, the Inagaki et al. reference discloses the fuel cell stack has a square shape cross-section and further comprises an anode gas supply manifold which supplies the anode gas to the anode gas passage of each fuel cell (33a) and an anode effluent exhaust manifold which recovers an anode effluent from the anode gas passage of each fuel cell (33b). The anode effluent exhaust manifold being arranged offset (Applicant's diagonally) with respect to the anode gas supply manifold in the cross-section of the fuel stack. A cathode gas supply manifold which supplies a cathode gas to the cathode gas passage of each fuel cell (34a) and a cathode effluent exhaust manifold which recovers cathode effluent from the cathode gas passage of each fuel cell (34b). The cathode effluent exhaust manifold being arranged offset (Applicants' diagonally) with respect to the cathode gas supply manifold in the cross-section of the fuel cell stack. The anode gas supply manifold and the cathode effluent exhaust manifold are arranged in parallel along a first side of the stacking surface of the fuel cell (Fig. 3 to the left of the stack), while the anode effluent exhaust manifold and the cathode gas supply manifold are arranged in parallel along a second side (Fig. 3, to the right of the stack), which is opposed to the first side with respect to the cross-section of the fuel cell stack.

Regarding claim 11, the Inagaki et al. reference the anode gas passage and the cathode gas passage respectively comprise an even number of bent portions (P38), the number being two or more (which incorporates four or more). The even numbered bent portions (8 bent portions as depicted by Fig. 3) including the bent portion from cathode

inlet side and excluding the most down stream bent portion, comprises through hole allows movement of moisture through the fuel cell (32a).

Regarding claim 14, the Inagaki et al. reference discloses a drain manifold (all of that plates that connect 32b together) which drains water in the through-hole to outside of the fuel cell stack (Fig. 7).

Regarding claim 15, the Inagaki et al. reference discloses fuel cells are provided with a coolant passage (32a) therebetween which is substantially superimposed in a stacking direction on the cathode gas passage and through which a coolant flows in the same direction as a cathode gas that flows (34a) in the cathode gas passage.

Regarding claim 16, the Inagaki et al. reference discloses the fuel cell stack comprises supply manifolds that respectively distribute the anode gas, the cathode gas, and the coolant to the fuel cells, and exhaust manifolds that respectively recover an anode gas, a cathode gas, and a coolant from the fuel cells, and wherein the anode gas supply manifold, the cathode gas exhaust manifold and the coolant exhaust manifold are located on the left side of Fig. 3, while the anode gas exhaust manifold, the cathode gas supply manifold and the coolant supply manifold are located on the right side of Fig.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HELEN O.K. CONLEY whose telephone number is

(571)272-5162. The examiner can normally be reached on Monday-Friday 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Helen O.K. Conley/
Examiner, Art Unit 1795